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Effective Date: July 1, 2006  
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**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM  
WASTE DISCHARGE PERMIT No. WA-002515-1**

For

**ENERGY NORTHWEST'S  
COLUMBIA GENERATING STATION**

PO Box 968  
Richland, Washington 99352-0968

Issued by

**State of Washington  
ENERGY FACILITY SITE EVALUATION COUNCIL**  
Olympia, Washington 98504-3172

In compliance with the provisions of  
The State of Washington Water Pollution Control Law  
Chapter 90.48 Revised Code of Washington  
Chapters 173-201A, 200, 204, 205, 216, and 220 Washington Administrative Code  
and  
The State of Washington Energy Siting Law  
Chapter 80.50 Revised Code of Washington  
Chapter 463-76 Washington Administrative Code  
and  
The Federal Water Pollution Control Act  
(The Clean Water Act)  
Title 33 United States Code, Section 1251 et seq.

COLUMBIA GENERATING STATION	
<u>Facility Location</u> Hanford Reservation -- Township 11N, Range 28E, Section 5 <u>Water Body I.D. No. (Outfall 001)</u> WA-CR-1030	<u>Receiving Water</u> Outfall 001: Columbia River (River Mile 351.75) Outfalls 002 & 003: Ground Water <u>Discharge Locations</u> Outfall 001      Latitude: 46° 28' 17" N Longitude: 119° 15' 45" W Outfall 002      Latitude: 46° 28' 26" N Longitude: 119° 19' 43" W Outfall 003      Latitude: 46° 28' 03" N Longitude: 119° 19' 48" W
<u>Industry Type</u> Steam-Electric Power Generation (SIC 4911)	

The Columbia Generating Station is authorized to discharge in accordance with the special and general conditions which follow.

  
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Jim Luce, Chair  
Energy Facility Site Evaluation Council

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**SUMMARY OF PERMIT REPORT SUBMITTALS**

Refer to the Special and General Conditions of this permit for additional submittal requirements.

<b>Permit Section</b>	<b>Submittal</b>	<b>Frequency</b>	<b>First Submittal Date</b>
S2.A.1.b	Characterization of Blowdown for Asbestos Fibres—Outfall 001	1/permit cycle	With the application for permit renewal
S3.A.1	Discharge Monitoring Report—Outfall 001	Monthly	
S3.A.2	Discharge Monitoring Reports—Outfalls 002 and 003	Annually	
S3.E	Noncompliance Notification	As necessary	As necessary
S4.B	Reporting Bypasses	As necessary	As necessary
S5.	Application for Permit Renewal	1/permit cycle	{At least 180 days before permit expiration}
S6.C	Solid Waste Control Plan	1/permit cycle	With the application for permit renewal
S6.C	Modification to Solid Waste Plan	As necessary	As necessary
S7.	Best Management Practices Plan	1/permit cycle	With the application for permit renewal
S7.	Modification to Best Management Practices Plan	As necessary	As necessary
S8.C	Mixing Zone Plan of Study	1/permit cycle	30 days prior to start of study
S8.C and S11.A.2	Effluent Mixing Report	1/permit cycle	{two years after permit effective date}
S9.B.9	Acute Toxicity Characterization Data	4/permit cycle	60 days after each subsequent sampling event
S9.B.10	Acute Toxicity Effluent Test Results with Permit Renewal Application	1/permit cycle	With the application for permit renewal
S10.B.9	Chronic Toxicity Characterization Data	4/permit cycle	60 days after each subsequent sampling event

Permit Section	Submittal	Frequency	First Submittal Date
S10.B.10	Chronic Toxicity Effluent Test Results with Permit Renewal Application	1/permit cycle	With the next application for permit renewal
S11.A.1	Schedule of Compliance-Outfall Evaluation	1/permit cycle	{one year after permit effective date}
S11.A.2 and S8.C	Schedule of Compliance-Effluent Mixing Study Report	1/permit cycle	{two years after permit effective date}
S11.A.3, S9. and S10.	Schedule of Compliance-WET Testing Reports	1/permit cycle	See S9 and S10
S11.B.1	Schedule of Compliance-Ground Water Quality Study Scope of Work	1/permit cycle	{one year after permit effective date}
S11.B.2	Schedule of Compliance-Ground Water Quality Study Quality Assurance Project Plan	1/permit cycle	{two years after permit effective date}
S11.B.4	Schedule of Compliance-Ground Water Quality Study Report	1/permit cycle	With the next application for permit renewal
S11.C	Schedule of Compliance-Schedule of Compliance Final Report	1/permit cycle	With the next application for permit renewal
S11.D	Schedule of Compliance-Request of Extension of the Schedule of Compliance	As necessary	As necessary
G1.	Notice of Change in Authorization	As necessary	As necessary
G4.	Permit Application for Substantive Changes to the Discharge	As necessary	As necessary
G5.	Engineering Report for Construction or Modification Activities	As necessary	As necessary
G7.	Notice of Permit Transfer	As necessary	As necessary
G20.	Reporting Anticipated Non-compliance	As necessary	As necessary
G21.	Reporting Other Information	As necessary	As necessary

## SPECIAL CONDITIONS

### S1. DISCHARGE LIMITATIONS

Beginning on {the effective date of this permit} and lasting through {the expiration date}, the Permittee is authorized to discharge treated wastewater at the permitted locations subject to the following limitations:

#### A. General

All discharges and activities authorized by this permit shall be consistent with the terms and conditions of this permit.

The discharge of any pollutant not specifically authorized by this permit in concentrations which cause or contribute to a violation of water quality standards established under Section 307(a) of the Clean Water Act or Chapter 173-201A Washington Administrative Code (WAC) shall also be a violation of this permit and the Clean Water Act.

There shall be no discharge in wastewater of radioactive materials in excess of the limitations on radioactive effluents established by the Nuclear Regulatory Commission in the facility operating license and in 10 CFR Parts 20 and 50.

The discharge of any of the pollutants in this permit condition more frequently than, or at a level in excess of, that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit.

This permit contains a Schedule of Compliance (Special Condition S11). Data generated during this permit cycle may result in revisions of effluent limits at the next permit renewal.

#### B. Outfall 001 - Circulating Cooling Water Blowdown Discharges

##### Effluent Limitations

Discharges of condenser cleaning effluent, radioactive waste treatment system effluent, and cooling water blowdown from the circulating water system or discharge from the standby service water system, or both, at the location shown on the cover sheet, are subject to complying with the following effluent limitations:

EFFLUENT LIMITATIONS: OUTFALL 001		
Parameter	Average Monthly <sup>1</sup>	Maximum Daily <sup>2</sup>
Temperature	Not Applicable	(Note 3)
Total Residual Halogen <sup>4</sup>	Not Applicable	0.1 mg/L
pH, standard units <sup>5</sup>	Not Applicable	Between 6.5 and 9.0
Copper <sup>6</sup> (Dec. – Feb.)	70 µg/L	108 µg/L
Copper <sup>6</sup> (Mar. – Nov.)	223 µg/L	345 µg/L
Flow	5.6 MGD	9.4 MGD
<sup>1</sup> The average monthly effluent limitation is defined as the highest allowable average daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month. <sup>2</sup> The maximum daily effluent limitation is defined as the highest allowable daily discharge. <sup>3</sup> The temperature of the circulating cooling water blowdown shall not exceed, at any time, the lowest temperature of the circulating cooling water, prior to the addition of makeup water, except that the temperature of the blowdown may be less than the temperature of the river. <sup>4</sup> There shall be no discharge of cooling water from Outfall 001 during biofouling treatments nor until the concentration of total residual halogens is less than 0.1 mg/L for at least 15 minutes. <sup>5</sup> Indicates the range of permitted values. When pH is continuously monitored, excursions as low as 5.0 or as high as 9.5 shall not be considered violations provided no single excursion exceeds 60 minutes in length and total excursions do not exceed 7 hours and 26 minutes per month. <sup>6</sup> Copper limitations are for total recoverable metal.		

There shall be no discharge of polychlorinated biphenyl compounds. There shall be no detectable amount of priority pollutants (listed in 40 CFR Part 423, Appendix A) in the effluent from chemicals added for cooling system maintenance.

C. Outfall 002

Discharge of storm water runoff, wastewater from potable and demineralized water production, intake air wash unit blowdown, and water from non-radioactive equipment dewatering, leakage, cleaning, and flushing, at the approximate location described on the cover sheet, shall not cause a violation of the ground water standards (Chapter 173-200 WAC). Existing and future beneficial uses of ground water shall be protected.

D. Outfall 003

Discharges of service water filter backwash, and pond sediment and water during pond cleaning, at the approximate location shown on the cover sheet, shall not cause a

violation of the ground water standards (Chapter 173-200 WAC). Existing and future beneficial uses of ground water shall be protected.

#### E. Mixing Zone Descriptions

The maximum boundaries of the mixing zones for discharges from Outfall 001 are defined as follows:

The chronic mixing zone shall extend no more than 100 feet upstream, nor more than 306 feet downstream of the outfall. The chronic mixing zone shall extend no more than 175 feet to either side of the centerpoint of the outfall. The chronic dilution factor is 50.

The acute mixing zone shall extend no more than 31 feet downstream of the outfall. The acute dilution factor is calculated to be 11.

## S2. MONITORING REQUIREMENTS

#### A. Monitoring Schedule

##### 1. Outfall 001

##### a. Circulating Cooling Water Blowdown Discharges

Beginning {on the effective date of this permit} and lasting {through the expiration date}, the Permittee shall monitor the discharge of circulating cooling water blowdown at Outfall 001 as follows:

Parameter	Units	Sample Point <sup>1</sup>	Minimum Sampling Frequency	Sample Type
Flow	MGD	Blowdown	Continuous <sup>2</sup>	Meter
pH	S. U.'s	Circulating Water	Continuous <sup>2,3</sup>	Meter
Temperature	°C	Blowdown	Continuous <sup>2</sup>	Meter
Turbidity	NTU	Circulating Water or Blowdown	Monthly	Grab
Total Residual Halogen	mg/L	Circulating Water	Twice per treatment	Grab
Total Copper	µg/L	Circulating Water or Blowdown	Monthly	Grab
Total Chromium	µg/L	Circulating Water or Blowdown	Twice per year	Grab

Parameter	Units	Sample Point <sup>1</sup>	Minimum Sampling Frequency	Sample Type
Total Zinc	µg/L	Circulating Water or Blowdown	Twice per year	Grab
<sup>1</sup> During a maintenance outage, sample point may be relocated to reflect temporary reconfiguration of the circulating water system. <sup>2</sup> Continuous means uninterrupted - except for brief lengths of time for calibration, power failure, or for unanticipated equipment repair or maintenance. If monitoring equipment fails, Permittee shall implement manual monitoring and diligently pursue equipment repair/replacement. <sup>3</sup> For facilities which continuously monitor and record pH values, the number of minutes the pH value was below or above the permitted range shall be recorded for each day and the total minutes for the month reported, the durations when values were above and below the permitted range shall be reported separately. The instantaneous maximum and minimum pH shall be reported monthly.				

b. Characterization of Blowdown for Asbestos Fibres

The Permittee shall sample blowdown once during the permit cycle and test for asbestos fibre concentration. The sample shall be a grab sample taken when the circulating water cooling system is operating at an average number of cycles of concentration and only blowdown is being discharged. Test results shall be submitted **with the application for permit renewal**. The Council may remove this requirement if Energy Northwest presents a schedule to replace asbestos fill material in the cooling towers.

c. Standby Service Water Discharges

The Permittee shall monitor service water discharges made directly to the blowdown line according to the following schedule:

Parameter	Units	Sample Point	Minimum Sampling Frequency	Sample Type
Volume	MGD	Pond to be Discharged	Continuous <sup>1</sup> or Volume Estimate <sup>2</sup>	Meter or Estimate
pH	S. U.'s	Pond to be Discharged	Daily <sup>3</sup>	Grab

Parameter	Units	Sample Point	Minimum Sampling Frequency	Sample Type
<sup>1</sup> Continuous means uninterrupted - except for brief lengths of time for calibration, power failure, or for unanticipated equipment repair or maintenance. If monitoring equipment fails, Permittee shall implement manual monitoring and diligently pursue equipment repair/replacement. <sup>2</sup> Volumes of batch releases of water for pond draining may be estimated based on level measurements. Feed-and-bleed discharges to the blowdown line shall be measured by flow meter. <sup>3</sup> Prior to commencement of discharges, Permittee shall verify that pH is within specified limits. Measurements shall be taken daily while discharge is in progress.				

## 2. Outfall 002

Two 24-hour composite samples shall be taken representative of typical facility discharge to the unlined pond. One sample shall be taken annually between March 15 – May 15 and one sample shall be taken annually between September 15 – November 15. Effluent shall be tested for:

Parameter	Test Method <sup>1</sup>
Chromium <sup>2</sup>	EPA 200.8
Lead <sup>2</sup>	EPA 200.8
Fluoride	EPA 300.0
Nitrate-Nitrite (as N)	EPA 300.0
Copper <sup>2</sup>	EPA 200.8
Nickel <sup>2</sup>	EPA 200.8
Iron <sup>2</sup>	EPA 200.8
Manganese <sup>2</sup>	EPA 200.8
Zinc <sup>2</sup>	EPA 200.8
Chloride	EPA 300.0
Sulfate	EPA 300.0
Total Dissolved Solids	SM 2540C
pH	Field Metered
Conductivity	Field Metered
<sup>1</sup> Methods for the Chemical Analysis of Water and Wastewater, EPA 600/4-79-020; other EPA approved methods that provide as good or better detection level may be substituted. <sup>2</sup> Metals as Total Recoverable.	

Effluent quantity shall be monitored continuously and recorded each month. If flow instrumentation fails, Permittee shall estimate effluent quantities and diligently pursue equipment repair/replacement. Monitoring and analysis requirements for Outfall 002 may be modified by the Council based on the results of at least two years of monitoring data.

### 3. Outfall 003

Permittee shall monitor effluent to Outfall 003, a surface depression. Each pond cleaning that results in discharge of water or water/sediment slurry shall be sampled at least once. The quantity and duration of the discharge shall be recorded. Filter backwash effluent shall be sampled at a frequency of at least once every six (6) weeks of operation. Discharge frequency, duration, and quantity shall be reported. Discharge quantity may be a reasonable estimate rather than direct measurement.

Samples shall be tested as follows:

Parameter	Test Method <sup>1</sup>	Sample Type
Total Recoverable Lead	EPA 200.8	Grab
Dissolved Lead	EPA 200.8	Grab

<sup>1</sup> Other EPA approved methods that provide as good or better detection level may be substituted.

### B. Sampling and Analytical Procedures

Samples and measurements taken to meet the requirements of this permit shall be representative of the volume and nature of the monitored parameters, including representative sampling of any unusual discharge or discharge condition, including bypasses, upsets, and maintenance-related conditions affecting effluent quality.

Sampling and analytical methods used to meet the monitoring requirements specified in this permit shall conform to the latest revision of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136. All analytical methods used shall have reporting levels/practical quantitation levels at least one magnitude below the applicable water quality criteria, except for total residual halogen.

### C. Flow Measurement

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the quantity of monitored flows. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements are consistent with the accepted industry standard for that type of device. Frequency of calibration shall be in conformance with manufacturer's recommendations and at a

minimum frequency of at least one calibration per year. Calibration records shall be maintained for at least three years and shall be made available to authorized inspectors upon request.

**D. Laboratory Accreditation**

All monitoring data required by the Council shall be prepared by a laboratory registered or accredited under the provisions of, *Accreditation of Environmental Laboratories*, Chapter 173-50 WAC. Flow, temperature, settleable solids, conductivity, pH, turbidity, and internal process control parameters are exempt from this requirement. Conductivity and pH shall be accredited if the laboratory must otherwise be registered or accredited.

**S3. REPORTING AND RECORDKEEPING REQUIREMENTS**

The Permittee shall monitor and report in accordance with the following conditions. The falsification of information submitted to the Council shall constitute a violation of the terms and conditions of this permit.

**A. Reporting**

**1. Outfall 001**

The first monitoring period begins on the effective date of the permit. Monitoring results for circulating cooling water blowdown discharges to Outfall 001 (Condition S2.A.1.a) shall be submitted monthly. Monitoring data obtained during each monitoring period shall be summarized and reported on a Discharge Monitoring Report (DMR) form approved, by the Council. DMR forms shall be submitted no later than the 15th day of the month following the completed monitoring period, unless otherwise specified in this permit. Monitoring results for service water discharges to Outfall 001 (Condition S2.A.1.c) shall be reported on the DMR for the month(s) in which they occur.

DMRs shall be submitted monthly whether or not the facility was discharging. If there was no discharge during a given month, the Permittee shall submit the form with the words "no discharge" entered in place of the monitoring results.

**2. Outfalls 002 and 003**

Monitoring results for discharges to Outfall 002 (Condition S2.A.2) and Outfall 003 (Condition S2.A.3) shall be compiled in an annual reports that are submitted no later than March 1 of the following year.

All reports shall be sent to:

EFSEC  
PO Box 43172  
Olympia, WA. 98504-3172

Department of Ecology  
Richland Office  
Attn: Columbia Generating Station Monitoring  
3100 Port of Benton Blvd.  
Richland, WA 99354

B. Records Retention

The Permittee shall retain records of all monitoring information for a minimum of three (3) years. Such information shall include all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by the Council.

C. Recording of Results

For each measurement or sample taken, the Permittee shall record the following information: (1) the date, exact place, method, and time of sampling or measurement; (2) the individual who performed the sampling or measurement; (3) the dates the analyses were performed; (4) the individual who performed the analyses; (5) the analytical techniques or methods used; and (6) the results of all analyses.

All laboratory reports providing data for organic and metal parameters shall include the following information: sampling date, sample location, date of analysis, parameter name, CAS number, analytical method/ number, method detection limit (MDL), laboratory practical quantitation limit (PQL), reporting units, and concentration detected. Analytical results from samples sent to a contract laboratory must have information on the chain of custody, the analytical method, QA/QC results, and documentation of accreditation for the parameter.

D. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by this permit using test procedures specified by Condition S2. of this permit, then the Permittee shall include the results of this monitoring in the calculation and reporting of the data submitted in the Permittee's DMR.

E. Twenty-four Hour Notice of Noncompliance Reporting

1. The Permittee shall report the following occurrences of noncompliance by telephone to the Council's office at (360) 956-2121, the next business day after the Permittee becomes aware of any of the following circumstances:

a. any noncompliance that may endanger health or the environment;

- b. any unanticipated bypass that exceeds any effluent limitation in the permit (See Condition S4.B., "Bypass Procedures");
  - c. any upset that exceeds any effluent limitation in the permit (See G.15, "Upset"); or,
  - d. any violation of a maximum daily or instantaneous maximum discharge limitation for any of the pollutants in Condition S1.B.
- 2. The Permittee shall also provide a written submission within five days of the time that the Permittee becomes aware of any event required to be reported under subpart 1, above. The written submission must contain:
  - a. a description of the noncompliance and its cause;
  - b. the period of noncompliance, including exact dates and times;
  - c. the estimated time noncompliance is expected to continue if it has not been corrected; and,
  - d. steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
- 3. The Council may waive the written report on a case-by-case basis if the oral report has been received within 24 hours of the noncompliance.
- 4. Reports must be submitted to the address provided in Condition S3.A.2.

F. Other Noncompliance Reporting.

The Permittee shall report all instances of noncompliance, not required to be reported within 24 hours, at the time that monitoring reports for S3.A ("Reporting") are submitted. The reports must contain the information listed in paragraph E above, ("Twenty-four Hour Notice of Noncompliance Reporting"). Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

G. Maintaining a Copy of This Permit

The Permittee shall keep a copy of this permit at the facility and make it available upon request to the Council or Department of Ecology inspectors.

**S4. OPERATION AND MAINTENANCE****A. Proper Operation and Maintenance**

The Permittee shall, at all times, properly operate and maintain all facilities or systems of treatment and control (and related appurtenances) which are installed to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by the Permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

**B. Bypass Procedures**

Bypass, which is the intentional diversion of waste streams from any portion of a treatment process, is prohibited, and the Council may take enforcement action against a Permittee for bypass unless one of the following circumstances (1, 2, or 3) is applicable.

1. Bypass for Essential Maintenance without the Potential to Cause Violation of Permit Limits or Conditions.

Bypass is authorized if it is for essential maintenance and does not have the potential to cause violations of limitations or other conditions of this permit, or adversely impact public health as determined by the Council prior to the bypass. The Permittee shall submit prior notice at least ten (10) days before the date of the bypass.

2. Bypass Which is Unavoidable, Unanticipated, and Results in Noncompliance of this Permit.

This bypass is permitted only if:

- a. Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.
- b. There are no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment downtime (but not if adequate backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance), or transport of untreated wastes to another treatment facility.

- c. The Council is properly notified of the bypass as required in Condition S3E of this permit.
3. Bypass which is Anticipated and has the Potential to Result in Noncompliance of this Permit.

The Permittee shall notify the Council at least thirty (30) days before the planned date of bypass. The notice shall contain (1) a description of the bypass and its cause; (2) an analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing; (3) a cost-effectiveness analysis of alternatives including comparative resource damage assessment; (4) the minimum and maximum duration of bypass under each alternative; (5) a recommendation as to the preferred alternative for conducting the bypass; (6) the projected date of bypass initiation; (7) a statement of compliance with SEPA; (8) a request for modification of water quality standards as provided for in WAC 173-201A-110, if an exceedance of any water quality standard is anticipated; and (9) steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

For probable construction bypasses, the need to bypass shall be identified as early in the planning process as possible. The analysis required above shall be considered during preparation of the engineering report or facilities plan and plans and specifications and shall be included to the extent practical. In cases where the probable need to bypass is determined early, the Permittee shall continue to analyze up to and including the construction period in an effort to minimize or eliminate the bypass.

The Council will consider the following prior to issuing an administrative order for this type bypass:

- a. If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit.
- b. If there are feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.
- c. If the bypass is planned and scheduled to minimize adverse effects on the public and the environment.

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, the Council will approve or deny the request. The public shall be notified and given an opportunity to comment on bypass incidents of significant duration, to the extent feasible. Approval of a request to bypass will be by administrative order issued by the Council under RCW 90.48.

C. Duty to Mitigate

The Permittee is required to take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

**S5. APPLICATION FOR PERMIT RENEWAL**

The Permittee shall submit an application for renewal of this permit **at least one hundred eighty (180) days prior to the expiration date.**

**S6. SOLID WASTE DISPOSAL**

A. Solid Waste Handling

The Permittee shall handle and dispose of all solid waste material in such a manner as to prevent its entry into state ground or surface water.

B. Leachate

The Permittee shall not allow leachate from its solid waste material to enter state waters without providing all known, available, and reasonable methods of prevention, control, and treatment (AKART), nor allow such leachate to cause violations of the state Surface Water Quality Standards, Chapter 173-201A WAC, or the state Ground Water Quality Standards, Chapter 173-200 WAC. The Permittee shall apply for a permit or permit modification as may be required for such discharges to state ground or surface waters.

C. Solid Waste Control Plan

The Permittee shall submit all proposed revisions or modifications to the Solid Waste Control Plan to the Council. The Permittee shall comply with any plan modifications. The Permittee shall submit an update of the plan **with the application for permit renewal one hundred eighty (180) days prior to the expiration date of the permit.**

**S7. BEST MANAGEMENT PRACTICES PROGRAM**

The "Oil and Hazardous Substances Spill Prevention, Control and Counter-Measure Plan", dated 11/12/04, submitted with the permit application, is incorporated by reference into this section as the Best Management Practices (BMP) Plan.

The Permittee shall amend the BMP Plan whenever there is a change in facility design, construction, operation or maintenance that materially affects the facility's potential for discharge of significant amounts of toxic or hazardous pollutants into waters of the state.

Proposed modifications to the BMP Plan which affect the discharger's permit obligations shall be submitted to the Council for approval. The Permittee shall comply with any plan modifications. The Permittee shall submit an update of the plan **with the application for**

permit renewal one hundred eighty (180) days prior to the expiration date of the permit.

## S8. EFFLUENT MIXING STUDY

### A. General Requirements

The Permittee shall determine the degree of effluent and receiving water mixing which occurs within the mixing zone (as defined in permit condition S1.E). The degree of mixing shall be determined during critical conditions, as defined in WAC 173-201A-020 Definitions-“Critical Condition,” or as close to critical conditions as reasonably possible.

If the results of the mixing study, toxicity tests, and chemical analysis indicate that the concentration of any pollutant(s) exceeds or has a reasonable potential to exceed the state Water Quality Standards, Chapter 173-201A WAC, the Council may issue a regulatory order to require a reduction of pollutants or modify this permit to impose effluent limitations to meet the Water Quality Standards.

### B. Assessment

The critical condition scenarios shall be established in accordance with *Guidance for Conducting Mixing Zone Analyses* (Ecology, 1996). The Permittee shall measure the dilution ratio in the field with dye using study protocols specified in the *Guidance*, section 5.0 “Conducting a Dye Study,” as well as other protocols listed in subpart C. Protocols. The use of mixing models is an acceptable alternative or adjunct to a dye study if the Permittee knows, or will establish the critical ambient conditions necessary for model input with field studies; and if the diffuser is visually inspected for integrity or has been recently tested for performance by the use of tracers. The *Guidance* shall be consulted when choosing the appropriate model. The use of models is also required if critical condition scenarios that need to be examined are quite different from the set of conditions present during the dye study.

Validation (and possibly calibration) of a model may be necessary and the Permittee shall validate the model in accordance with the *Guidance* mentioned above - in particular subsection 5.2 “Quantify Dilution.” The Permittee shall apply the resultant dilution ratios for acute and chronic boundaries in accordance with directions found in Ecology’s *Permit Writer’s Manual* (Ecology publication 92-109, most current version) - in particular Chapter VI.

The federally recommended technology-based chromium and zinc effluent guideline limits shall be assessed for compliance with the water quality standards using the revised dilution factors. Chromium in the discharge shall be characterized into trivalent and hexavalent species to allow assessment of compliance with the water quality criteria for trivalent and hexavalent chromium. In addition, the Permittee shall evaluate phosphorus, temperature and turbidity in the discharge for compliance with the water quality standards.

The Permittee shall assess the discharge for compliance with those portions of the state's Surface Water Quality Standards contained in Chapter 173-201A WAC, 2003 revision, that have been approved by the EPA.

The Permittee shall assess the discharge for compliance with the human health criteria, contained in the Federal Register, November 9, 1999.

In the event the Permittee desires water quality-based copper limits other than those determined by the effluent mixing study, the Permittee shall conduct a water effects ratio study as part of the mixing study. The Permittee shall use the procedures specified in the most recent, EPA-approved water effects ratio guidance available.

The Permittee shall use a consistent method of fixing and reporting the location of the outfall and mixing zone boundaries (i.e., triangulation off the shore, microwave navigation system, or using Loran or Global Positioning System (GPS) coordinates). The Permittee shall identify the method of fixing station location and the actual station locations in the report.

#### C. Reporting Requirements

A Plan of Study shall be submitted to the Council for review **thirty (30) days** prior to initiation of the effluent mixing study.

The Permittee shall submit results of the effluent mixing study in the Effluent Mixing Report, and shall submit the report to the Council for approval by **{two years after the effective date}**.

During the course of this study, if the Permittee identifies information on the background physical conditions or background concentration of chemical substances (for which there are criteria in Chapter 173-201A WAC) in the receiving water, the Permittee shall submit this information to the Council as part of the Effluent Mixing Report.

#### D. Protocols

The Permittee shall determine the dilution ratio using protocols outlined in the following references, approved modifications thereof, or by another method approved by the Council:

-Akar, P.J. and G.H. Jirka, *Cormix2: An Expert System for Hydrodynamic Mixing Zone Analysis of Conventional and Toxic Multiport Diffuser Discharges*, USEPA Environmental Research Laboratory, Athens, GA, Draft, July 1990.

-Baumgartner, D.J., W.E. Frick, P.J.W. Roberts, and C.A. Bodeen, *Dilution Models for Effluent Discharges*, USEPA, Pacific Ecosystems Branch, Newport, OR, 1993.

-Doneker, R.L. and G.H. Jirka, *Cormix1: An Expert System for Hydrodynamic Mixing Zone Analysis of Conventional and Toxic Submerged Single Port Discharges*, USEPA, Environmental Research Laboratory, Athens, GA. EPA/600-3-90/012, 1990.

-Ecology, *Permit Writer's Manual*, Water Quality Program, Department of Ecology, Olympia WA 98504, July 1994, including most current addenda.

-Ecology, *Guidance for Conducting Mixing Zone Analyses, Permit Writer's Manual*, (Appendix 6.1), Water Quality Program, Department of Ecology, Olympia WA 98504, October, 1996.

-Kilpatrick, F.A., and E.D. Cobb, *Measurement of Discharge Using Tracers*, Chapter A16, *Techniques of Water-Resources Investigations of the USGS, Book 3, Application of Hydraulics*, USGS, U.S. Department of the Interior, Reston, VA, 1985.

-Wilson, J.F., E.D. Cobb, and F.A. Kilpatrick, *Fluorometric Procedures for Dye Tracing*, Chapter A12, *Techniques of Water-Resources Investigations of the USGS, Book 3, Application of Hydraulics*, USGS, U.S. Department of the Interior, Reston, VA, 1986.

## S9. ACUTE TOXICITY

### A. Effluent Characterization

The Permittee shall conduct acute toxicity testing on the final effluent to determine the presence and amount of acute (lethal) toxicity. The Permittee shall conduct the two acute toxicity tests listed below on each sample taken for effluent characterization.

The Permittee shall conduct effluent characterization for acute toxicity quarterly for one year. Acute toxicity testing shall follow protocols, monitoring requirements, and quality assurance/quality control procedures specified in this section, including a dilution series consisting of a minimum of five concentrations and a control. This series of dilutions shall include the acute critical effluent concentration (ACEC), which shall be determined in the Effluent Mixing Study required by Special Condition S8 of this permit. The series shall be used to estimate the concentration lethal to 50% of the organisms (LC<sub>50</sub>). The Permittee shall also report percent survival in 100% effluent.

The Permittee shall begin testing shall begin **no later than January 2009**.

Acute toxicity tests shall be conducted with the following species and protocols:

1. Fathead minnow, *Pimephales promelas* (96-hour static-renewal test, method: EPA-821-R-02-012).
2. Daphnid, *Ceriodaphnia dubia*, *Daphnia pulex*, or *Daphnia magna* (48-hour static test, method: EPA-821-R-02-012). The Permittee shall choose one of the three species and use it consistently throughout effluent characterization.

## B. Sampling and Reporting Requirements

1. The Permittee shall submit all reports for effluent characterization or compliance monitoring in accordance with the most recent version of Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* in regards to format and content. Reports shall contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data on floppy disk for electronic entry into the Department's database, then the Permittee shall send the disk to the Department along with the test report, bench sheets, and reference toxicant results.
2. The Permittee shall conduct testing on composite samples. The Permittee shall cool composite samples taken for toxicity testing to 0 - 6 degrees Celsius while being collected and shall send samples to the lab immediately upon completion. Samples must be 0 - 6° C at receipt. The lab shall begin the toxicity testing as soon as possible but no later than 36 hours after sampling ended. The lab shall store all samples at 0 - 6° C in the dark from receipt until completion of the test.
3. All samples and test solutions for toxicity testing shall have water quality measurements as specified in Department of Ecology Publication #WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* or most recent version thereof.
4. All toxicity tests shall meet quality assurance criteria and test conditions in the most recent versions of the EPA manual listed in subsection A. and the Department of Ecology Publication #WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. If the Council determines test results are invalid or anomalous, the Permittee shall repeat testing with freshly collected effluent.
5. Control water and dilution water shall meet the requirements of the EPA manual listed in subsection A or pristine natural water of sufficient quality for good control performance.
6. Final effluent samples for whole effluent toxicity testing shall be chemically dechlorinated with sodium thiosulfate just prior to test initiation. No more sodium thiosulfate shall be added than is necessary to neutralize the chlorine.
7. The Permittee may choose to conduct a full dilution series test during compliance monitoring to determine dose response. In this case, the series must have a minimum of five effluent concentrations and a control. The series of concentrations must include the ACEC.
8. The Permittee shall repeat all whole effluent toxicity tests, effluent screening tests, and rapid screening tests that involve hypothesis testing and do not comply with the acute statistical power standard of 29% as defined in WAC 173-205-020 on a fresh sample with an increased number of replicates to increase the power.

9. The Permittee shall submit reports of individual characterization or compliance test results to the Council **within sixty (60) days after each sample date.**
10. The Permittee shall submit the **Acute Toxicity Summary Report** to the Council **with the next application for permit renewal.**

#### **S10. CHRONIC TOXICITY**

##### **A. Effluent Characterization**

The Permittee shall conduct chronic toxicity testing on the final effluent using the three chronic toxicity tests listed below on each sample taken for effluent characterization.

The Permittee shall begin testing **no later than January 2009.**

The Permittee shall conduct effluent testing for chronic toxicity quarterly for one year. The Permittee shall conduct chronic toxicity testing during effluent characterization on a series of at least five concentrations of effluent in order to determine appropriate point estimates. This series of dilutions shall include the chronic critical effluent concentration (CCEC), which shall be determined in the Effluent Mixing Study required by Special Condition S8 of this permit. This series of dilutions shall include the ACEC. The Permittee shall compare the ACEC to the control using hypothesis testing at the 0.05 level of significance as described in Appendix H, EPA/600/4-89/001.

The Permittee shall conduct chronic toxicity tests with the following three species and the most recent version of the following protocols:

<b>Freshwater Chronic Test</b>	<b>Species</b>	<b>Method</b>
Fathead minnow survival and growth	<i>Pimephales promelas</i>	EPA-821-R-02-013
Water flea survival and reproduction	<i>Ceriodaphnia dubia</i>	EPA-821-R-02-013
Alga	<i>Selenastrum capricornutum</i>	EPA-821-R-02-013

##### **B. Sampling and Reporting Requirements**

1. The Permittee shall submit all reports for effluent characterization or compliance monitoring in accordance with the most recent version of Department of Ecology Publication #WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* in regards to format and content. Reports shall contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data on floppy disk for electronic entry into the Department's database,

then the Permittee shall send the disk to the Department along with the test report, bench sheets, and reference toxicant results.

2. The Permittee shall conduct testing on composite samples. Composite samples taken for toxicity testing shall be cooled to 0 - 6 degrees Celsius while being collected and shall be sent to the lab immediately upon completion. Samples must be 0 - 6° C at receipt. The lab shall begin the toxicity testing as soon as possible but no later than 36 hours after sampling ended. The lab shall store all samples at 0 - 6° C in the dark from receipt until completion of the test.
3. All samples and test solutions for toxicity testing shall have water quality measurements as specified in Department of Ecology Publication #WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* or most recent version thereof.
4. All toxicity tests shall meet quality assurance criteria and test conditions in the most recent versions of the EPA manual listed in subsection A. and the Department of Ecology Publication #WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. If the Council determines test results are invalid or anomalous, the Permittee shall repeat testing with freshly collected effluent.
5. Control water and dilution water shall meet the requirements of the EPA manual listed in subsection A or pristine natural water of sufficient quality for good control performance.
6. Final effluent samples for whole effluent toxicity testing shall be chemically dechlorinated with sodium thiosulfate just prior to test initiation. No more sodium thiosulfate shall be added than is necessary to neutralize the chlorine.
7. The Permittee may choose to conduct a full dilution series test during compliance monitoring to determine dose response. In this case, the series must have a minimum of five effluent concentrations and a control. The series of concentrations must include the ACEC and the CCEC.
8. The Permittee shall repeat all whole effluent toxicity tests, effluent screening tests, and rapid screening tests that involve hypothesis testing, and do not comply with the chronic statistical power standard of 39% as defined in WAC 173-205-020, on a fresh sample with an increased number of replicates to increase the power.
9. The Permittee shall submit reports of individual characterization or compliance test results shall be submitted to the Council **within sixty (60) days after each sample date.**
10. The Permittee shall submit the **Chronic Toxicity Summary Report** to the Council **with the next application for permit renewal.**

**S11. SCHEDULE OF COMPLIANCE**

The Permittee shall be in compliance with the state's Surface Water Quality Standards and Ground Water Quality Standards, contained in Chapters 173-201A and 173-200 WAC, respectively, by **{the permit expiration date}**. This Schedule of Compliance requires the Permittee to submit a series of reports as specified in Parts A, B, C, and D of this permit condition. The submittals are subject to review and approval by the Council.

**A. Discharge to Surface Water****1. Outfall Evaluation**

The Permittee shall inspect the exposed portion of the outfall line and diffuser to document its integrity and continued function. The Permittee shall assess the riverbed in the vicinity of the diffuser for deposition of sediments. The report shall include photographic verification. The inspection shall be conducted prior to the Effluent Mixing Study required by Special Condition S8. The Outfall Evaluation Report shall be received by the Council for review and approval by **{one year after the effective date}**.

**2. Effluent Mixing Study**

The Permittee shall conduct an Effluent Mixing Study in accordance with the requirements in Special Condition S8 of this permit. The Permittee shall submit the Effluent Mixing Study Report to the Council for review and approval by **{two years after the effective date}**.

**3. Whole Effluent Toxicity (WET) Testing**

The Permittee shall conduct WET Testing of the discharge in accordance with Special Conditions S9 and S10 of this permit. The Permittee shall submit WET reports to the Council for review and approval in accordance with the dates in S9.B.9 and 10 and S10.B9 and 10.

**B. Discharges to Ground Water****1. Scope of Work**

The Permittee shall submit a scope of work for the ground water quality study to the Council for review and approval by **{one year after the effective date}**.

**2. Quality Assurance Project Plan**

The Permittee shall submit a quality assurance project plan (QAPP) to the Council for review and approval by **{two years after the effective date}**. The Plan shall be developed in substantial accordance with *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies*, Ecology Publ. No. 01-03-003 and the appropriate sections of *Implementation Guidance for the Ground Water Quality Standards*, Ecology Publ. No. 96-02.

### 3. Ground Water Quality Study

The Permittee shall conduct the ground water quality study during the third year of the permit cycle. Sampling of ground water shall be conducted upgradient and downgradient of the outfalls.

### 4. Ground Water Quality Study Report

The Permittee shall submit the Ground Water Quality Study Report as part of the Schedule of Compliance Final Report **{with the next application for permit renewal}**.

## C. Schedule of Compliance Final Report

The Permittee shall submit a Schedule of Compliance Final Report, for review and approval, **{with the next application for permit renewal}**. The summary report shall integrate the results of the discrete tasks of the compliance schedule and, as necessary, propose numerical effluent limits or any additional measures to be taken to assure compliance with the water quality standards. In the event any of the facility's discharges are not in compliance with the applicable water quality standards, the report will contain a plan and a schedule to achieve compliance.

## D. Request of Extension of the Schedule of Compliance

In the event more time is necessary to complete the tasks required in this Schedule of Compliance, the Permittee may request that the Council grant an extension. The request shall be by formal written letter and shall contain: (1) an explanation of why more time is needed, and (2) a revised schedule for completing the remaining tasks. The extension shall be granted at the Council's discretion through an administrative order or permit modification.

## GENERAL CONDITIONS

### G1. SIGNATORY REQUIREMENTS

All applications, reports, or information submitted to the Council shall be signed and certified.

- A. All permit applications shall be signed by either a responsible corporate officer of at least the level of vice president of a corporation, a general partner of a partnership, or the proprietor of a sole proprietorship.
- B. All reports required by this permit and other information requested by the Council shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
  - 1. The authorization is made in writing by a person described above and submitted to the Department.
  - 2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)
- C. Changes to authorization. If an authorization under paragraph B.2 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph B.2 above must be submitted to the Council prior to or together with any reports, information, or applications to be signed by an authorized representative.
- D. Certification. Any person signing a document under this section shall make the following certification:

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

**G5. PLAN REVIEW REQUIRED**

Prior to constructing or modifying any wastewater control facilities, an engineering report and detailed plans and specifications shall be submitted to the Council for approval in accordance with Chapter 173-240 WAC. Engineering reports, plans, and specifications shall be submitted at least one hundred eighty (180) days prior to the planned start of construction unless a shorter time is approved by the Council. Facilities shall be constructed and operated in accordance with the approved plans.

**G6. COMPLIANCE WITH OTHER LAWS AND STATUTES**

Nothing in this permit shall be construed as excusing the Permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

**G7. TRANSFER OF THIS PERMIT**

In the event of any change in control or ownership of facilities from which the authorized discharge emanate, the Permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Council.

**A. Transfers by Modification**

Except as provided in paragraph B below, this permit may be transferred by the Permittee to a new owner or operator only if this permit has been modified or revoked and reissued under 40 CFR 122.62(b)(2), or a minor modification made under 40 CFR 122.63(d), to identify the new Permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

**B. Automatic Transfers**

This permit may be automatically transferred to a new Permittee if:

1. The Permittee notifies the Council at least 30 days in advance of the proposed transfer date.
2. The notice includes a written agreement between the existing and new Permittee's containing a specific date transfer of permit responsibility, coverage, and liability between them.
3. The Council does not notify the existing Permittee and the proposed new Permittee of its intent to modify or revoke and reissue this permit. A modification under the subparagraph may also be minor modification under 40 CFR 122.63. If this notice is not received, the transfer is effective on the date specified in the written agreement.

**G8. REDUCED PRODUCTION FOR COMPLIANCE**

The Permittee, in order to maintain compliance with its permit, shall control production and/or all discharges upon reduction, loss, failure, or bypass of the treatment facility until

the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power of the treatment facility is reduced, lost, or fails.

#### **G9. REMOVED SUBSTANCES**

Collected screenings, grit, solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall not be resuspended or reintroduced to the final effluent stream for discharge to state waters.

#### **G10. DUTY TO PROVIDE INFORMATION**

The Permittee shall submit to the Council, within a reasonable time, all information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Permittee shall also submit to the Council upon request, copies of records required to be kept by this permit.

#### **G11. OTHER REQUIREMENTS OF 40 CFR**

All other requirements of 40 CFR 122.41 and 122.42 are incorporated in this permit by reference.

#### **G12. ADDITIONAL MONITORING**

The Council may establish specific monitoring requirements in addition to those contained in this permit by administrative order or permit modification.

#### **G13. PAYMENT OF FEES**

The Permittee shall submit payment of fees associated with this permit as assessed by the Council.

#### **G14. PENALTIES FOR VIOLATING PERMIT CONDITIONS**

Any person who is found guilty of willfully violating the terms and conditions of this permit shall be deemed guilty of a crime, and upon conviction thereof shall be punished by a fine of up to ten thousand dollars (\$10,000) and costs of prosecution, or by imprisonment in the discretion of the court. Each day upon which a willful violation occurs may be deemed a separate and additional violation.

Any person who violates the terms and conditions of a waste discharge permit shall incur, in addition to any other penalty as provided by law, a civil penalty in the amount of up to ten thousand dollars (\$10,000) for every such violation. Each and every such violation shall be a separate and distinct offense, and in case of a continuing violation, every day's continuance shall be deemed to be a separate and distinct violation.

**G15. UPSET**

Definition – “Upset” means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of the following paragraph are met.

A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that: 1) an upset occurred and that the Permittee can identify the cause(s) of the upset; 2) the permitted facility was being properly operated at the time of the upset; 3) the Permittee submitted notice of the upset as required in Condition S3.E; and 4) the Permittee complied with any remedial measures required under Condition S4.C of this permit.

In any enforcement proceedings the Permittee seeking to establish the occurrence of an upset has the burden of proof.

**G16. PROPERTY RIGHTS**

This permit does not convey any property rights of any sort, or any exclusive privilege.

**G17. DUTY TO COMPLY**

The Permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

**G18. TOXIC POLLUTANTS**

The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if this permit has not yet been modified to incorporate the requirement.

**G19. PENALTIES FOR TAMPERING**

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than two years per violation, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this

Condition, punishment shall be a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than four (4) years, or by both.

**G20. REPORTING ANTICIPATED NON-COMPLIANCE**

The Permittee shall give advance notice to the Council by submission of a new application or supplement thereto at least one hundred and eighty (180) days prior to commencement of such discharges, of any facility expansions, production increases, or other planned changes, such as process modifications, in the permitted facility or activity which may result in noncompliance with permit limits or conditions. Any maintenance of facilities, which might necessitate unavoidable interruption of operation and degradation of effluent quality, shall be scheduled during non-critical water quality periods and carried out in a manner approved by the Council.

**G21. REPORTING OTHER INFORMATION**

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Council, it shall promptly submit such facts or information.

**G22. COMPLIANCE SCHEDULES**

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date.



**STATE OF WASHINGTON**

**FACT SHEET FOR NPDES PERMIT WA-002515-1  
For  
COLUMBIA GENERATING STATION**

**APPENDIX E – RESPONSE TO COMMENTS**

**Permit Number:**

**WA-002515-1**

**Permittee:**

**Energy Northwest  
Columbia Generating Station**

**Permitting Authority:**

**Energy Facility Site Evaluation Council  
Olympia, Washington 98504**

writing process; rather than issuing a relatively baseless permit with the potential to reopen the provisions pending the completion of the effluent mixing study.

Part of the additional analysis that needs to be included is a study of the groundwater releases, and potential impact to the river corridor from the relatively shallow aquifer and the close hydrological connectivity that has been demonstrated between this aquifer and the river. As indicated by the monitoring results presented in various parts of the fact sheet, the groundwater standards are being exceeded for a number of contaminants. This is a cause for concern for the Tribe as the groundwater is already heavily degraded from releases from the Hanford Nuclear Reservation.

## **Temperature**

### **Background Temperature Impacts on Columbia River Salmonids**

There has been concern about elevated stream temperatures in the Columbia River Basin for over 25 years. In 1971, EPA, in cooperation with the Atomic Energy Commission, and NMFS, published the "Columbia River Thermal Effects Study." Today, 29 years later, it is clear that temperature control on the mainstem and tributaries of the Columbia River is of even greater concern. Indeed, elevated water temperature is probably the single most significant water quality factor limiting salmon survival. Elevated stream temperatures pose a risk of irreparable harm to salmon and steelhead populations in the Columbia River. Elevated temperatures affect all life stages of salmonids, and cause direct and indirect mortality. Because Blue Heron's current discharges add hot water to the already too warm Columbia River, these discharges may adversely affect salmon and steelhead and harm their habitat in a variety of ways.

Elevated water temperatures can lead to direct fish mortality by two means. First, if temperatures become extremely hot (i.e., greater than 28° C), fish can perish within minutes. Second, temperatures in the mid to high 20° C range (24 - 28°) can cause death in cold-water species within hours to days.

At slightly lower temperatures (i.e., between approximately 16 - 22° C), salmon begin to be negatively affected by means of reduced growth rates (juveniles), increased mortality from diseases (any life stage), reduced ability to compete for food and space (juveniles), reduced swimming and jumping ability (juveniles to adults), inability to migrate (smolts or adults), reversal of the smoltification process, reduced gamete viability, and continuous reduction in juvenile densities with temperature increases within this range. This temperature range can result in reduction in fish health and an increase in mortality from indirect causes. The magnitude of the effects increases with temperature.

Elevated water temperatures can increase the predation rate on smolts by warmwater-tolerant fish. This effect can be caused by a combination of factors. Salmon juveniles, that are otherwise healthy, cannot swim effectively at high temperatures or at low dissolved oxygen concentrations. The combined effect of high temperature and low DO makes predator avoidance by juvenile salmon even weaker and increases the toxicity of many chemical substances. Prolonged periods of high temperatures typical of summertime conditions can reduce fish vitality

and introduce them to warmwater diseases. This impairs the ability of salmon to avoid predators. The Columbia River and especially the Hanford Reach (home to critically important salmon habitat as well as one of the most contaminated Superfund sites in the country) contain excessive amounts of toxic substances in their sediments that can become even more toxic to salmon under elevated water temperatures.

Juveniles passing downriver past the Columbia Generating Station's facilities as smolts or pre-smolt migrants can be either killed outright in heated effluent plumes in the river, killed in the production facilities by entrainment in the cooling water intake pipe (we believe that the intake pipe is unscreened), or can be injured, impaired, or killed directly or indirectly by means outlined above. A thermal effluent plume can result in mortality by direct exposure to hot water. The lethal effect of a given exposure temperature increases when fish are previously acclimated to lower rather than higher water temperatures. That is, mortalities in a plume can be even worse provided that fish were acclimated to lower temperatures. In addition to direct mortality in the plume itself, the thermal shocks involved in entering and leaving the plume area can easily leave juveniles stunned and unable to swim or avoid predators. Thermal shock effects can be produced with abrupt temperature changes of as little as 10°C, and even smaller changes would produce a thermal shock when ambient conditions are >20°C.

### **General Biotic Effects**

#### **Growth**

The capacity of fish to grow is influenced by the effect of temperature on metabolic rates, their appetite for feeding, efficiency of assimilating food, and their ability to compete for food with other species. At moderate temperatures, fish can channel much of the energy in food into growth. As temperatures increase beyond optimum levels, fish growth declines toward zero as they must invest more energy into simply staying alive. Indeed, at the upper limits of temperature tolerance, fish do not have enough energy to digest food and will cease all activity, including feeding, and eventually starve to death.

#### **Disease**

Most fish pathogens that can produce major epidemics in cold-water salmonids become more virulent at temperatures ranging from 16 - 22° C. For chinook, sockeye, and coho salmon, the incidence of disease and mortality from columnaris (a deadly bacterial disease) increases dramatically with temperature increases above 15.5 - 16.7° C (60 - 62° F). Such diseases associated with warm waters can produce mortality in all salmon species and life stages.

Disease surveys have not been conducted as frequently in recent years in the Columbia and Snake Rivers, but infection and mortality from disease effects is a constant concern in a warmed river. In mid-July 1998, there were three consecutive days of high fall chinook mortality detected at McNary Dam due to high water temperatures. Of 25 fish sampled from the Juvenile Fish Facility at McNary Dam that were distressed (swimming on their sides) during this high water temperature period, it was determined that 88% had columnaris infection. Although the fish were near death, there were no visible external signs of disease.

Prolonged temperatures exceeding 15°C have often been linked to outbreak of warmwater diseases. Incidence of these diseases and percent mortality both increase as temperatures increase. Temperatures of 20°C were reported to result in 100% mortality of chinook during columnaris outbreaks (Ordal and Pacha 1963). These authors considered temperature-induced columnaris as a major factor responsible for declines of Columbia River chinook. The system of reservoirs has been credited with a major increase in incidence of columnaris (Snieszko 1964).

Columnaris infections have been found throughout the mainstem Columbia River and in numerous tributaries. It is carried by all species of Pacific salmon, and also in carp, sucker, chub, bass, northern pikeminnow, chiselmouth, and catfish (Colgrove and Wood 1966). Many strains are of high virulence and can kill within 12-24 hours. Contagion of the disease has been suspected during passage of salmon through fish ladders (Pacha 1961) and increased incidence may be a result of creation of the slow moving reservoirs (Snieszko 1964). Warm sloughs may also harbor the disease organism in coarsefish that can then infect salmonids migrating in warmed reservoirs (Fujihara et al. 1970).

#### Food

As temperature and metabolic rates increase, oxygen and food requirements increase as well. If food is limited (the normal condition in a river), growth rates will be even lower than they would otherwise be at a given temperature. Additionally, higher temperatures generally result in lower dissolved oxygen amounts in the river and the combination of low dissolved oxygen and high temperature can synergistically cause increased metabolic stress. Fall chinook downstream forced to reside in water temperatures far above their growth optimum and in a warmed river producing inadequate food supplies can experience starvation conditions (Coutant 1999). Thermal impacts are more serious under food limitation conditions.

#### Predators

Competition, predation, and other species interactions with cool- and warm-water species (both native and exotic) can be significantly moderated by reducing water temperature. In the Pacific Northwest, non-native warm-water tolerant fishes, such as smallmouth bass, have colonized most large river basins, creating predatory and competitive interactions with native cold-water salmonids. In years with low flows and high water temperatures, predation rates on subyearling chinook in Lower Granite Reservoir are higher than normal (Bennett et al. 1996, as cited by NMFS 1999). This predation effect would likely increase with temperature and as the ability of salmon to avoid predation declines.

Thermal shock is a significant biologic impact to salmon in thermal plumes. In studies conducted by Coutant (1973), chinook juveniles acclimated at 15°C and shocked by instantaneous transfer to constant temperature baths in the range 26 to 30°C for exposure times equivalent to 10% of the median time to loss of equilibrium (LE) for those temperatures were subject to a significantly greater predation rate than were unshocked controls.

## Stress

When salmon are forced to inhabit waters with high average or maximum temperatures (i.e., temperatures between the level resulting in low growth and those that begin to kill fish directly), loading stresses accumulate. As more energy is diverted to respiration at higher temperatures, less is available for growth and other necessary functions (gamete development, swimming, predator avoidance, disease resistance, recovery, and healing). When insufficient energy is available for important body processes, mortality can occur from accumulated stress or else poor gamete production and viability can translate to the next generation in terms of poor reproduction success.

## Increased Temperatures Affect Every Salmonid Life Stage:

Salmonids go through several distinct life stages. *Eggs* are laid in the river bottom in a *redd* -- a spawning nest dug into gravel in a stream bed by a female adult salmon. *Alevin* are newly hatched young salmon that are still attached to the yolk sac of the egg. At the next stage, the young fish, now called *fry*, emerge from the gravel. A *juvenile* is a young fish, usually one to two years of age; the period that a juvenile remains in freshwater before migrating to the ocean is the freshwater *rearing* life stage. A *smolt* is a juvenile salmon migrating to the ocean and undergoing physiological changes (known as *smoltification*) to adapt its body from a freshwater to a saltwater environment. Depending on the species, salmon spend one to four years in the ocean before returning to their natal streams to spawn and die. An adult *spawner* is a mature fish that produces eggs or sperm.

Water temperature affects every salmonid life stage. A broad survey of the literature on temperature effects on numerous salmonid species reveals a high degree of similarity in response to temperature for any given life stage. Among the salmonids, bull trout require the lowest range of temperatures for spawning and rearing while redband trout can tolerate rearing at the high end of the range for salmonids. What is good, in terms of temperature, for one salmon species is generally good for the others. Migration temperatures might provide one apparent exception, but the differences for spring and fall chinook could merely reflect temperatures available during their migration rather than what they require.

## Adult Migration

The temperature ranges under which migration is generally considered to be feasible for summer and fall chinook are 13.9-20.0 and 10.6-19.4° C, respectively. However, a migration threshold exists at a temperature of 21-22° C that is documented by numerous studies across all major migratory salmonid species in the Columbia River.

The 23-26° C UUILT range for salmonids applies to the juvenile life stage. Although much less information is available for salmon adults, that which does exist indicates that this life stage is much more sensitive to high temperatures. Becker (1973) identified the thermal tolerance of chinook jacks to be 21-22° C based on a 168 hr TLM (median tolerance limit) test. Coutant (1970) identified the incipient lethal temperature for chinook jacks as 22° C with prior acclimation to 19° C (estimated from ambient river temperatures). Columbia River steelhead,

acclimated to river temperature of 19° C had a lethal threshold of 21° C (Coutant 1970). These lethal limits are 5.5° C lower than for juvenile rainbow acclimated to 18° C (Alabaster and Welcomme 1962, as cited by Coutant 1972).

### Pre-Spawning

Certain salmon species (e.g., spring chinook) enter freshwater during relatively cool-water seasons, but must enter natal streams and hold throughout the warm summertime (known as a holding adult). Warm temperatures increase the susceptibility of holding adult fish to mortality from thermal effects. When ripe adult female chinook are exposed to temperatures above 13 - 15.5° C (56 - 60° F), pre-spawning adult mortality becomes pronounced. In addition, the subsequent survival of eggs decreases and alevin development is inhibited due to the exposure of the female to warm temperatures, even if subsequent stream temperatures during the egg and alevin development are cooler.

Hatchery managers have long known that highest survival of chinook adults occurs when water temperatures do not exceed 14°C (Leitritz and Lewis 1976, Piper et al. (1982). When adults hold in water temperatures greater than these levels, egg survival increasingly declines (Hinze 1959, Hinze et al. 1956, as cited by Marine 1992). Migration of coho in waters with temperatures exceeding 20°C caused deformation of eggs and poor egg viability compared with coho that migrated in cooler waters. A reduction in egg quality within the body of females after ovulation has been reported in rainbow trout held at temperatures of 13-15°C. Fish (1944) reported very high holding survival of sockeye when temperatures were <15.6°C, but survival was only 51% under a fluctuating temperature regime of 9.4-23.3°C.

### Spawning

NMFS and EPA recommend a maximum spawning temperature of 12.8° C (55° F) for Chinook. With the Hanford Reach begin a critically important spawning ground for Chinook, any increase in temperature from the facility to the already warm Columbia is a problem.

### Eggs, Fry, and Juveniles

Although spawning occurs over a broad range of temperatures, the requirements for normal egg development are much narrower. Numerous authors cite poor egg survival when incubation temperatures fall within the range of 13 - 17° C (56 - 63° F). Moderate temperatures are required during fry emergence so that the fry can properly begin feeding and growth. An optimum temperature range for chinook juvenile growth occurs from approximately 10 - 15.6° C (50 - 60° F). As temperatures increase, individual growth rates reach zero at approximately 21° C (70° F). However, if food is limited (i.e., not abundant so as to permit feeding to satiation), growth can be zero at even lower temperatures.

### Smoltification

The transformation of juvenile salmon from freshwater to saltwater-tolerant form involves physiological changes. It is recommended for all anadromous salmonids that temperature not

exceed 12.2° C (54° F) to ensure proper smoltification (see review by McCullough 1999). Temperatures of 18 - 21° C (65 - 70° F) place smolts under either lethal or loading stresses that can impair metabolic activity. If the fish arrive at the ocean not properly smolted (physiologically ready), they will die from exposure to salt water.

#### The Cumulative Effects of Elevated Stream Temperature Harm Fish.

When discussing temperature impacts to salmonids, it is important to remember how temperature affects entire aquatic ecosystems in addition to a particular stream segment. First, the influence of elevated temperatures can continue downstream, as the water in the stream does not immediately cool down. Therefore, if several activities occur along the stream, their effects on temperature will accumulate.

Second, increased stream temperatures decrease available habitat within a river basin. Salmonids use habitat in a stream system from the cold headwaters (assuming channel gradients are low enough) downstream to the upper temperature distribution limit. As land management actions (e.g., riparian canopy removal, channel widening, sedimentation, water diversion) cumulatively increase water temperature, the distribution limit shifts upstream thereby decreasing total available habitat. The reduction in thermal suitability in low gradient habitats in mainstem rivers is a particularly serious loss to the productive capacity of spring and fall chinook.

#### Columbia Riverkeeper Narrative Statement

I am writing on behalf of Columbia Riverkeeper, the Northwest Environmental Defense Center and the Rosemere Neighborhood Association to comment on the proposed NPDES permit renewal for the Columbia Generating Station (CGS). We have serious concerns about the proposed permit since the CGS generates over 664 million gallons of discharges a year into the Columbia and contains a number of toxics that present a direct threat to both aquatic life and human health. Our concerns are increased by the fact that the fundamental assumptions that underlie the permit are based on dilution rates which were calculated by the applicant and which Ecology acknowledges are both outdated and unreliable. In the face of such questionable data Ecology should have had the applicant gather the necessary data over the previous year to two years instead of approving a permit absent sufficient information.

Our more specific concerns include:

##### **1. Lack of accurate or current data**

Ecology admits throughout the Fact Sheet that the PLUMES study conducted by the applicant over ten years ago to evaluate dilution ratios from the CGS are outdated and need to be updated. Fact Sheet (FS at 20). Ecology, nonetheless, did not require the applicant to prepare even an updated computer modeling of the discharge using newer CORMIX modeling nor require an actual mixing zone study before proposing to issue the draft permit. As a result, Ecology lacks a reasonable basis for determining that the discharges into the

Columbia do not have a reasonable potential to violate state water quality standards and protect beneficial uses.

Ecology has an affirmative duty to ensure that pollution discharges do not further degrade a portion of the Columbia which not only has serious toxicity issues related to contamination on the Hanford reservation, but is also one of the last free flowing stretches of the Columbia and therefore a key spawning and rearing area for salmonids.

Similarly, the draft permit would require "reassessment of the impacts, if any, of the discharges to ground water." FS 28. Again, while we agree with the need to assess how discharges of contaminants such as lead, which is being discharged to the ground at 1,920% above state groundwater standards (Table 10), is affecting groundwater, the time for such analysis is before the permit is re-issued. Under the proposed compliance schedule Ecology would not be able to determine that either the discharges to the river or the ground at issue would meet water quality standards until five years from permit issuance. State and federal law place an affirmative duty on Ecology to be able to make that determination at the time of permit issuance. WAC 173-201A 030; WAC 173-201A 130.

## **2. Planned mixing zone fails to protect beneficial uses**

The proposed mixing zone would allow water quality standards to be exceeded in 101,500 square feet of the Columbia River. Permit at 9. There are multiple problems with the proposed mixing zone. First, the mixing zone applies broadly to toxics, temperature, and other conventional parameters. The requirements under WAC 173-201A 100, however, were not specific to any parameter and cannot be reasonably met by a broad non-pollutant specific evaluation.

Additionally, there is no indication as to how the "size of the mixing zone and the concentrations of pollutants shall be minimized" under the proposed permit. In fact, the proposed mixing zone is essentially the maximum size allowed under the WAC. WAC 173-201A 100(7)(a).

The fact sheet fails to describe any new treatment measures that were considered by the discharger as a means to decrease the concentrations of pollutants in the applicant's outfall and therefore decrease the size of the allowed mixing zone. Additionally, there is not any data that shows that the size of the mixing zone could not be made smaller by the use of newer technology, such as electro-coagulation treatments. Use of electro-coagulation treatment, for example, would significantly reduce concentrations of toxic pollutants, as well as turbidity and other pollutants in the applicant's outfall and would not present an unreasonable costs given the revenue generated from the facility.

Technologically a number of these systems are in current operation in Washington and the state has approved use of these systems for the control of toxic metals and other pollutants discharged by the applicant.

~~We have attached information about electro-coagulation systems~~ to these comments and also would refer DEQ to environmental consultant Neil Alongi who has designed a number of electro-coagulation systems for industrial facilities in southwest Washington.

In failing to consider treatment systems like electro-coagulation Ecology also cannot show that it is applying AKART as required by WAC 173-201A 100(2). Given the age of EPA's

BAT technical standards it is not reasonable to merely assume that BAT constitutes AKART especially when technologies like electro-coagulation not only exist but are being currently used in Washington with impressive results.

WAC 173-201A 100(4) states that, "No mixing zone shall be granted unless the supporting information clearly indicates the mixing zone would not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem, or adversely affect public health as determined by the department." (emphasis added).

In the instant case, however, Ecology acknowledges that the dilution modeling used by the discharger is not current and needs to be updated. Additionally, Ecology nor the discharger has not conducted any sediment, fish or shellfish toxicity studies in the area of the outfall to assess whether the applicant's toxic discharges are having an adverse effect on biota or sediment. While toxicity to species was found in WET testing, WET testing fails to represent the type of long-term cumulative impacts that species living and using the area around the applicant's outfall pipe actually experience.

Additionally, the permit fails to consider the effect of the effluent's temperature on migrating or resident salmonids. The end of pipe effluent temperatures were not disclosed in the permit and no evaluation was included that evaluated how the proposed temperature effluent limit ensured the protection of water quality standards and beneficial uses. The Columbia is listed as water quality limited for temperature in the area of the discharge and as a result there is no capacity for the river to assimilative thermal discharges. Even at the outside of the proposed mixing zone the Columbia will not meet the 20 degree C water quality standards and at times when the Columbia is just on the threshold of exceeding the 20 degree C standard the applicant's discharge will cause a violation of the standard outside the mixing zone. This would violate the requirement that, "Water quality criteria shall not be violated outside of the boundary of a mixing zone as a result of the discharge for which the mixing zone was authorized." WAC 173-201A-100 (5).

Similarly, there is no analysis to show that setting the acute mixing zone at 10% of the chronic mixing zone is as near to the point of discharge as is "practically attainable." Again, setting the acute toxicity zone at 10% of the mixing zone represents essentially the largest sized acute mixing zone potentially allowed under the WAC. WAC 173-201A 100(8). The lack of evaluation of any technical controls that could further reduce the pollutant concentrations combined with absence of any evaluation of how the mixing zone sizes could be reduced undermines the permits ability to comply with WAC 173-201A 100.

A careful assessment of the local temperature and toxicity effects of the applicant discharge is particularly important in light of findings by the USGS and that there is a significant level of salmon sex reversals occurring in the Hanford reach. We have attached a study by Nagel et al. that was funded through the USFS that found 84% of female salmon had sex chromosomes of males and had experienced a sex reversal.<sup>1</sup> The study explains that the most likely causes of the sex reversals included the effects of temperature changes during embryonic development and exposure to environmental estrogens. Ecology needs to review this study, recognize the serious problem that is facing salmon in the Hanford Reach, and ensure that changes to the proposed

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<sup>1</sup> Nagler et al. (2001), High Incidence of a Male-Specific Genetic Marker in Phenotypic Female Chinook Salmon from the Columbia River. Environmental Health Perspectives, Vol. 109, No. 1.

permit are made to reduce the chance that the facility is adding to or creating the observed sex reversals in salmonids.

## **Specific Concerns and Questions**

In this section, comments and responses are grouped by issue of concern.

The underlying theme of many of the comments submitted by the Columbia Riverkeeper and the Nez Perce Tribe challenge the legality of provisions in the permit that are in accordance with State and Federal law and regulations. These comments address such permit provisions as the legality of mixing zones, schedules of compliance, and the bioaccumulative effects and environmental fate of pollutants, are beyond the scope of this permit. Responses to these larger policy issues are contained in the section Response to Comments Concerning Legality of Permit Provisions, after specific issues are addressed.

### ***1. Temperature***

#### **Comment: Nez Perce Tribe**

[I]ncremental increases in river temperatures will have a negative effect on survival and reproduction of chinook, steelhead, and sockeye via several different mechanisms: (1) direct lethality under high temperature conditions to adults and smolts, (2) delay in migration and spawning, (3) bioenergetic depletion of energy stores by heightened respiration rates, and (4) deformation of eggs and decreased viability of gametes, and (5) increased rates of infection and mortality from salmonid diseases of warm water.

Because it is difficult to ascertain what the effluent standard for temperature is, the Tribe is assuming that the NPDES is pushing the edge of the allowable discharge limit. The ambiguity rises from footnote three in the draft permit:

“The temperature of the circulating cooling water blowdown shall not exceed, at any time, the lowest temperature of the circulating cooling water, prior to the addition of makeup water, except that the temperature of the blowdown may be less than the temperature of the river.” Pg. 8

This appears to create a floating standard based on the lowest temperature of the circulating cooling water, which not stated in any form anywhere in the permit or the fact sheet. As such, the only concrete standard identifiable in either the permit or the fact sheet is the Washington water quality standard of 20° C. This standard was administratively set at 20° C, rather than the standard 18° C, and rests upon what can only be described as shaky legal footing, as the Tribe does not believe this departure from the 18° C standard to be justified in any way. Because the permit allows for the use of a mixing zone, the Tribe does not believe the effluent limits for temperature are protective of cold-water aquatic species.

Additionally, the Tribe does not agree with the statement in the draft fact sheet that because much of the temperature problem in the Columbia is attributable to non-point sources, point source dischargers are not always warranted. The Tribe maintains that where a waterbody is degraded due to temperature concerns, all available steps must be taken to reduce the thermal loading into the waterbody. Reliance on the effluent mixing study to determine the need for a temperature standard is putting the cart before the horse, as the permitting authority should have this information in hand before reissuing a permit. *See comments on Lack of Data, supra.*

The Tribe respectfully requests that the Energy Facility Site Evaluation Council clarify the temperature standard to be used in the permit. In order to do this, the Council will need to delay the reissuance of the permit until the effluent mixing study is completed. Issuing a permit before gathering the requisite information is simply not an acceptable manner of regulating water pollution. In the future this type of information needs to be gathered by the applicant before the new permit begins. Additionally, the Tribe requests that the Council uses the standard Class A waters 18° C standard rather than the administratively altered 20° C standard. The 18° C will serve to more adequately protect rearing and migrating juvenile and adult salmon and steelhead in the Columbia River.

**Response:** The Nez Perce Tribe contends that an improper water quality criterion of 20°C, rather than the usual Class A criterion of 18°C, was used in the evaluation. However, WAC 173-201A-130(21) (1997 version) establishes a "special condition" of 20°C in the vicinity of the outfall for the Columbia River. The special condition states: "temperature shall not exceed 20.0°C due to human activities."

In 2003, the State of Washington adopted revised water quality standards, but retained the special condition of 20°C. At this time (May 2006), the U. S. Environmental Protection Agency (EPA) has not approved the revised standards, primarily due to disagreement with the State over the temperature criteria. Until different standards are adopted by the State and approved by EPA, the 1997 standards are in effect, and the appropriate criterion is 20°C.

Concerning the narrative effluent limit cited in the Tribe's comment, the limit was established by the Nuclear Regulatory Commission for nuclear generating stations discharging to surface waters. The permit will be modified to require evaluation of the adequacy of this narrative limit to compliance with the State's surface water quality standards. The narrative limit was retained from the previous permit pending a new assessment of existing dilution factors to determine if changes are necessary to achieve compliance with water quality-based effluent limits.

#### **Comments: Columbia Riverkeeper**

How has Ecology considered the effects of [the Nagel study on the effects of temperature on salmonid species] and evaluated the proposed permit in light of it? What basis does Ecology have for believing that the pollutants discharged from the applicant's facility is not contributing to the problems [of gender reversal] observed?

The proposed effluent limits to not ensure protection of beneficial uses or compliance with water quality standards.

**Temperature:** The failure to require any water quality based maximum and average discharge temperatures for the facility is inexcusable. With serious temperature problems not only on the Columbia, but specifically within the area of the applicant's outfall and the presence of one of the most important salmon spawning areas in the State of Washington Ecology should require temperature effluent limits to protect water quality. Ecology failed to consider the potential impacts of high temperature discharges on spawning salmon, juvenile salmon, or migrating salmon, such as the effects due to thermal shock. No information about how the applicant's discharges were currently affecting salmonid use in the area was evaluated. EPA's preparation of a TMDL for the Columbia does nothing to undermine Ecology's duty under the CWA and state law to ensure that every permitted discharge protects beneficial uses such as salmon.

**Response:** Evaluation of the impacts of temperature in the Permittee's discharge to receiving water quality was not possible due to the lack of end-of-pipe discharge data and the Council's determination to reassess the validity of the dilution factors. End-of-pipe discharge data was not available because the existing permit required monitoring at the facility, before the discharge entered the 3½ mile long outfall pipe, rather than at the discharge point. The Council considered requiring the Permittee to monitor the discharge during the permit development process, but the timing required to reassess the validity of the dilution factors would have precluded an accurate reasonable potential analysis.

However, the Permittee conducted a comprehensive thermal plume study in 1985 to verify compliance with the water quality standards for temperature. In-river sampling events occurred in March, April, August and November, 1985. Sensors were positioned in the river at various depths in the water column, and at 50-foot intervals from the outfall, out to 300 feet. During the worst-case scenario sampling event conducted in August, with a low river flow volume and at maximum discharge volume, the study documented a maximum increase over background temperature of no more than a 0.2°C (Thermal Plume Report, p. 10-3). The current (1997) water quality standards allow up to a 0.3°C increase over background temperature. The facility has not significantly modified its operating procedures since the study was conducted, so there is no reason to assume the discharge is violating the water quality standards for temperature at this time.

Concerning the Council's failure to consider the potential impacts of high temperature discharges on spawning salmon, juvenile salmon, or migrating salmon, such as the effects due to thermal shock, the State's surface water quality standards are intended to protect aquatic life. As was stated above, EPA is reviewing the State's revised, use-based temperature standards. The review is focused specifically on protection of endangered species, including salmon. However, until the revised standards are established and approved by EPA, the existing standards will be used, in accordance with State and Federal regulations.

The Council determined it is premature to establish numerical effluent limits for temperature at this time. This decision is in line with EPA's policy for temperature-impaired surface

waters. As the fact sheet stated (p. 20), the Columbia River is considered water quality-impaired for temperature. The EPA and Ecology are currently conducting a joint TMDL study to correct the impairment. The EPA issued a guidance document for implementing the temperature water quality standards in April 2003. (EPA, 2003) The document states that, due to the non-conservative nature of heat loading in a water body and the agency's finding that impairment of the river is caused primarily by non-point sources, numeric effluent limits for point sources discharges are not always warranted (p. 42). In lieu of numeric limitations, the EPA recommends that a study be conducted to determine a discharger's impact to the receiving water, followed by establishment of limits, if necessary (p. 43). As part of the effluent mixing study required by this permit, the Permittee is required to assess compliance of temperature in the discharge with the state's water quality standards. The existing narrative limit will be retained in the permit during the Schedule of Compliance. The necessity for a numerical final temperature limit will be determined in the effluent mixing study.

When considering the need for numerical effluent limits in the draft permit, the Council also took into account the routine monitoring and extensive studies conducted by the Permittee in the Columbia River from 1970 to 1995 (See Appendix D). The Permittee conducted routine monitoring of a comprehensive suite of parameters near the outfall from 1983 to 1995. In addition, the Permittee studied the effects of the discharge on the benthic and periphyton communities in the vicinity of the outfall. These studies found the discharge created no significant impacts to the aquatic environment.

## **2. Copper**

The permit fact sheet failed to include copper in the reasonable potential analysis and relies instead on the permit's existing copper limits and the proposed schedule of compliance. The permit cannot merely rely on the previous copper limit but must instead ensure that the proposed permit clearly meets the state water quality standard for copper. The CWA requires that dischargers comply with existing water quality standards and does not allow a schedule of compliance that would allow the applicant to continue exceeding the applicable standard. 33 U.S.C. Sect. 301(b)(2)(E).

What is the water hardness adjusted water quality limit for copper? Would the proposed permit ensure compliance with this limit? If not, what is the legal basis for such an exceedance? What data supports that the hardness of the Columbia at Hanford is as high as 50 mg/l?

The Fact Sheet explains that, "As a part of the effluent mixing zone study in the Schedule of Compliance, the Permittee is required to assess the compliance of the technology-based limits with the water quality standards for chromium and zinc." FS 16.

Again, deferring the determination regarding whether the discharge of toxics in the applicant's permits meets water quality standards until after the time of permit issuance violates both state and federal law and Ecology needs to have this information before it re-authorizes the applicant's discharges.

**Response:** A reasonable potential analysis was not conducted on copper in the discharge because the existing effluent limits were determined through the water effects ratio methodology, rather than using the established numerical water quality criteria in Chapter 173-201A WAC. The Council determined that the proper method to address copper in the discharge is to require the Permittee to conduct an effluent mixing study. In the event the study finds that copper in the discharge exceeds the water quality standards, the Permittee has the option of conducting a water effects ratio study to determine site-specific water quality criteria. If, after conducting the water effects ratio study, the discharge is found to cause an exceedance of the water quality standards using the revised dilution factors, the next permit may require treatment to reduce copper levels. In any case, the need for effluent limits for copper, and all the pollutants in the discharge, will be evaluated at the next permit renewal with the data generated during the upcoming permit cycle.

The river hardness value of 50 mg/L was taken from a previous NPDES Permit for the City of Kennewick written by the permit writer in 2003. The documentation for the basis of this value has been lost. However, a casual review of hardness data from Ecology's ambient monitoring station on the Columbia River at Umatilla shows hardness values ranging from 47.0 mg/L to 82.9 mg/L, as CaCO<sub>3</sub>, during the 2003 water year. In addition, sampling conducted in 1997-1998 as part of the water effects ratio study revealed values ranging from 52 mg/L to 68 mg/L, as CaCO<sub>3</sub>. A hardness of 50 mg/L appears reasonable, and perhaps conservative, given these data.

The commentor's question of whether the proposed permit will ensure compliance with the water quality criteria for copper will be answered with the results of the effluent mixing study.

### **3. *Whole Effluent Toxicity (WET) Testing***

#### **Columbia Riverkeeper Comment**

The proposed permit fails to include any requirement for regular WET testing despite information that the applicant's effluent was causing both chronic and acute toxicity. P. 24. The permit's allowance that WET testing not be completed until 2009 is difficult to understand given that Ecology should regularly require the data be gathered. Additionally, the permit should require that the data be gathered at times when critical discharges exist, such as irregular blow down, since there is no current requirement in the permit.

Given that the permit's water quality based effluent limits – or lack thereof – are based on dilution assumptions that even Ecology admits are inadequate, including regular (at least bi-annually) WET testing in the permits is particularly important.

**Response:** WET Testing takes place in a laboratory and requires exposure of the discharger's effluent to live test species at various dilutions. Two of those dilutions are a reflection of the acute and chronic dilution factors. The Permittee will determine these dilution factors as part of the required effluent mixing study. The study will also determine compliance with the

numeric, chemical-specific water quality criteria, which is a precursor for WET Testing. In other words, if the discharge is not in compliance with the numeric water quality criteria, WET Testing will only confirm what's already known. The Permittee will submit the results of the effluent mixing study to the Council for review and approval. The Council feels it would not be a prudent use of the Permittee's resources to conduct WET Testing before the dilution factors are approved and compliance with the numerical water quality criteria has been assessed.

#### 4. Toxics

##### **Columbia Riverkeeper Comment**

The proposed permit fails to comply with Ecology's toxics criteria. WAC 173-201A-040 states that "(1) Toxic substances shall not be introduced above natural background levels in waters of the state which have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the department."

The permit, however, fails to ensure that this standard is met since it is not based on accurate information about the discharge's actual dilution and no evaluation was made about the potential for toxics such as chromium, zinc and lead to bioaccumulate in downstream biota. No evaluation was made of the total mass toxic load that could be discharged under the proposed permits and even though chromium concentrations being discharged from outfall 001 exceed the chronic toxicity standard at the end of pipe by almost 300% the permit does not even require regular monitoring for chromium.

By preparing a Reasonable Potential Analysis from the perspective of the outside of the very mixing zone which was sized to prevent an exceedance of water quality standards Ecology all but ensures there will not be a reasonable potential for toxics to exceed the state standard. As a result, however, Ecology has no other analysis that evaluates the bioaccumulative effect of toxics like chromium on fish or shellfish which are currently consumed by Native Americans and others.

What information, if any, does Ecology have regarding the fate of toxics being discharged by the applicant?

**Response:** The first paragraph of the comment refers to the antidegradation portion of the State's surface water quality standards, as described in WAC 173-201A, Part III (2003 version). The Council has no evidence that the Permittee's discharge violates the antidegradation rule. Modeling studies and receiving water monitoring conducted in the past have consistently verified that the Permittee's discharge is in compliance with the State's surface water quality standards.

The Riverkeeper comment that the proposed permit authorizes the discharge of chromium at almost 300% of the chronic water quality criterion is not supported by the data. This issue is addressed on pages 21 and 22 of the fact sheet. The fact sheet states:

Regarding chromium, the [reasonable potential] analysis was inexact because the federal NPDES permit application requires chromium be characterized as total recoverable, while the state's surface water quality criteria specify trivalent and hexavalent chromium. Criteria for both trivalent and hexavalent chromium are presented in the table. Criteria for hexavalent chromium are more stringent because this species of the metal is more reactive, resulting in greater toxicity to aquatic life. The reasonable potential analysis for chromium was conducted using the more stringent hexavalent chromium criteria and the maximum effluent concentration reported in the application, and no reasonable potential was found. However, the proposed permit requires the Permittee to assess all toxics in the discharge for compliance with the applicable water quality standards as part of the effluent mixing study.

During the characterization period, the maximum concentration of *total* chromium discharged by the Permittee's facility was 29 µg/L. The chronic water quality criterion for *dissolved* hexavalent chromium is 10 µg/L. The reasonable potential analysis (see Appendix C of the fact sheet) shows the expected concentration of hexavalent chromium at the edge of the chronic mixing zone to be 0.64 µg/L, less than a tenth of the criterion. Furthermore, it's possible some or all of the chromium in the discharge is trivalent chromium, a less reactive and less toxic species of the metal, as reflected in the much higher numeric criteria. Special Condition S8.B of the permit requires the Permittee to characterize chromium in the discharge in the trivalent and hexavalent species of the metal and assess compliance with all water quality criteria and narrative standards.

The tone and substance of the comments assume that the Permittee's discharge is out of compliance with the applicable water quality standards. However, there is no evidence to support this assumption. To the contrary, the Permittee conducted monitoring of the receiving water within the mixing zone from 1983 to 1995, and submitted empirical data verifying compliance with the water quality standards. Furthermore, the Permittee conducted numerous investigations of the streambed in the vicinity of the outfall that also verified the discharge was not creating any discernible impacts to aquatic life.

Concerning the environmental fate and bioaccumulative effects of the discharge on aquatic life, and the Native Americans who consume fish and shellfish, see the **Response to Comments Concerning Legality of Permit Provisions**.

## 5. Human Health

### Columbia Riverkeeper Comment

The fact sheet explains that the "Permittee is required to evaluate the discharge for compliance with the human health criteria as a part of the effluent mixing study." P 25. Ecology,

however, cannot approve the proposed permit unless it has the information to support that the discharges will in fact comply with applicable human health criteria.

The discharge of  $\beta$  radioactivity, arsenic, chromium, copper, asbestos, aluminum and a host of other toxics creates direct threats to the public health and particularly to tribal members and others that consume high levels of Columbia River fish and shellfish.

Given existing contamination from historic operations at Hanford, did Ecology evaluate whether water quality is currently protecting existing uses in the Hanford Reach, such as the collection and harvest of fish and shellfish? If not, how can Ecology determine that the permit would not exacerbate impacts to beneficial uses?

Again, given the massive level of contamination that has occurred at Hanford and the availability of technologies like electro-coagulation that could significantly reduce the pollutant discharges from the CGS, we believe that Ecology should seriously reconsider eliminating the planned mixing zone or only allow it to the extent that available technology cannot reduce the applicant's discharges.

**Response:** At this time, there is no evidence that the Permittee's discharge violates the State's human health criteria; however, Special Condition S8.B of the permit requires the Permittee to verify compliance with the human health criteria. The schedule of compliance is the regulatorily appropriate vehicle to provide the Permittee with the opportunity to verify compliance with the human health criteria.

The Permittee's facility has not discharged any radioactivity into the Columbia River since 1998. The Permittee's discharge of the other pollutants mentioned by the commentor has been found to be in compliance with the applicable water quality standards, and within the established effluent limits in the existing and previous permits.

Regarding the protection of beneficial uses, development of the State's Water Quality Standards, Chapter 173-201A WAC, is an on-going process of balancing restrictions and preserving beneficial uses of the State's waters, consistent with direction of the federal Clean Water Act. This permit, which includes authorization of a mixing zone, conforms to the State's Water Quality Standards and agency policy for implementing that regulation.

The Council feels it's premature to require installation of treatment technologies or revise the mixing zone authorization until such time as the required studies identify if there are instances of non-compliance with the water quality standards. In the event the Council determines the discharge is not in compliance with one or more parts of the surface water quality standards, the Council will take steps to prescribe specific solutions to the problem(s).

It is questionable whether the Council has regulatory authority to prescribe treatment processes because the State's AKART standard for industrial operations is pollutant- and facility-specific. An AKART analysis first considers pollution prevention measures available to the Permittee before incurring the capital costs of treatment. Reasonable and effective pollution prevention measures are identified as a result of a detailed assessment of the

Permittee's facility. After the possibilities of pollution prevention are exhausted, State regulations require consideration of treatment processes that are *all known, available and reasonable methods of prevention, control and treatment*. An AKART analysis requires a comprehensive and thorough engineering analysis of the most effective solutions to the problem and an economic analysis of the affordability of those solutions. The Council does not have the resources to conduct engineering and economic analyses for dischargers, and prescribing such treatment processes as electrocoagulation before such analyses are conducted would be considered arbitrary and capricious.

## 6. Mixing Zones

### Nez Perce Tribe Comment

Beyond the questionable public policy of allowing near unfettered use of mixing zones, the Nez Perce Tribe maintains that the legal validity of mixing zones under the Clean Water Act is still in question. Historically, pollution was dumped into the nation's rivers and streams with the thought that the natural dilution of the flow would eliminate any impacts. Unfortunately, the contrary lesson was learned with disastrous consequences, as rivers caught fire and riverbeds were left to become superfund sites. The passage of the Clean Water Act was a signal that the United States acknowledged that water cannot simply dilute pollution to the point of no impact. As such, the Act sought to impose end of pipe effluent limitations on dischargers. The use of mixing zones to dilute pollution represents a significant step away from the intended purpose, ideals and requirements of the Clean Water Act.

This is a particular problem where a mixing zone for temperature is allowed in a river with as large a volume of water as exists in the Columbia. This is because the  $t=34/(T+9)$  equation allows a larger volume of heat input to the river where a mixing zone of the size allowed in this permit is used. The Tribe requests that the Council find alternative pathways to the use of a mixing zone in the permit, as neither the current size, nor the dilution factors are adequate to protect salmonids and other aquatic life upon which they need to survive. This is especially important as the Council has not provided any information that demonstrates that the mixing zones authorized in this permit will "not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem, or adversely affect public health," as required by WAC 173-201A 100(4).

**Response:** The Council evaluated the permit application and assessed the applicant's discharge in the context of the water quality standards published in Chapter 173-201A WAC. The Permittee's discharge meets those standards promulgated to protect human health and environment, based on compliance demonstrated through past modeling and empirical receiving water studies. At this time, there is no evidence that the discharge violates the water quality standards; however, the proposed permit requires the Permittee to verify compliance with the standards by conducting an effluent mixing study, WET Testing and routine monitoring. See the section Response to Comments Concerning Legality of Permit Provisions, below, for further discussion of mixing zones.

## 7. Monitoring Requirements

### Nez Perce Tribe Comment

The monitoring requirements leave much to be desired. None of the monitoring requirements will provide the Council with statistically relevant information upon which to base a valid conclusion about the nature and contents of the facilities discharge. For example, the permittee is required to sample for asbestos blowdown once during the entire permit cycle, and for Chromium and zinc only twice a year. Additionally, the turbidity and copper discharge monitoring is only monthly. The permit, nor the fact sheet states the reasons for this decision. Is it based upon the reasonable potential analysis discussed in the fact sheet? That would be hard to believe for copper, as the fact sheet does not indicate that a reasonable potential analysis was conducted for copper.

The outfall monitoring reports in the fact sheet show the dearth of information on the contents of the facility's effluent. Tellingly, there is again no indication of the temperature of the effluent released. But the tables show that a variety of potentially bioaccumulative toxics are being released to the river. These heavy metals and toxics can accumulate in the fatty tissues of the fish that Tribal members frequently eat as part of their regular diet. The Tribe requests that all of these sampling frequencies be increased, for both the surface water and groundwater discharges (as the groundwater is hydrologically connected to the river as indicated in Fact Sheet pg. 25).

**Response:** The Council feels the pollutant parameters to be monitored and the associated frequencies in the proposed permit are appropriate. The selection of pollutant parameters to be monitored are determined by whether the pollutant is regulated by the federal categorical effluent standards and results of the reasonable potential analysis for all pollutants found to be present in the discharge. Federal regulations require a pollutant specified in the categorical effluent standards be monitored at least once per year. In addition, any pollutant present in the discharge found to have the potential to exceed the State's water quality standards must also be routinely monitored.

After the Council determines a pollutant must be monitored, the frequency is determined by the magnitude of its concentration, relative to the federal or state standard, and its variability. The monitoring frequency for a pollutant present at ten percent of the specified federal or state standard will be much lower than for a pollutant present at 85 percent of the applicable standard. A historical data set for a pollutant with a low variability of concentrations, in other words more predictable concentrations, would warrant less monitoring than a pollutant with high variability.

Pollutant concentrations in the Permittee's discharge have historically exhibited little variability, probably reflecting the consistent nature of the facility's operational characteristics. The Permittee's facility has not significantly changed its purpose or operational characteristics in the 20 years it has operated. The Permittee is unlikely to significantly change its operations during the upcoming permit cycle. In consideration of the steady-state nature of the

Permittee's operations, its excellent environmental compliance record, and the low variability of the effluent concentrations, the Council feels the monitoring schedule in the proposed permit is appropriate. The Council will reevaluate the need to revise the monitoring program at the next permit renewal, after it assesses the results of the pending studies.

## **8. Impacts to Groundwater**

### **Columbia Riverkeeper Comment**

Given existing contamination from historic operations at Hanford did Ecology evaluate whether water quality is currently protecting existing uses in the Hanford Reach, such as the collection and harvest of fish and shellfish? If not, how can Ecology determine that the permit would not exacerbate impacts to beneficial uses?

Again, given the massive level of contamination that has occurred at Hanford and the availability of technologies like electro-coagulation that could significantly reduce the pollutant discharges from the CGS we believe that Ecology should seriously reconsider eliminating the planned mixing zone or only allow it to the extent that available technology cannot reduce the applicant's discharges.

As stated we are concerned that the proposed discharges to ground do not protect groundwater. The lack of current data makes it impossible for Ecology or the applicant to determine that ground water standards are being met.

The acknowledgement that lead is being discharged at over 1,900 percent above the ground water concerns us and raises the obvious question of what is happening to the lead and other toxics that are concert.

What does Ecology believe is the fate of lead being discharged to ground?

**Response:** The Council feels it is inappropriate to associate historical contamination of the Hanford site with the Permittee's facility. The Permittee's facility is physically located within the Hanford reservation, but has never been associated with the nuclear weapons-making activities that resulted in the contamination of the subsurface environment.

A hydrogeologic study was conducted to ascertain the impacts of the Permittee's discharges to ground water quality, as required by the 1996 permit (fact sheet, pp. 25 and 26). The study concluded the discharges from Outfalls 002 and 003 did not degrade ground water quality. The proposed permit requires the Permittee to conduct confirmation monitoring during the third year of the permit cycle.

The question of the environmental fate of lead is addressed in the following section of this response to comments.

## **Response to Comments Concerning Legality of Permit Provisions**

### **Mixing Zones**

There is no specific statutory authority for mixing zones in the federal Clean Water Act. Mixing zones are a component of the State's Water Quality Standards, promulgated in accordance with the federal Water Quality Act of 1965, Pub.L. No. 89-234, 79 Stat. 903. EPA guidance to those responsible for designing, publishing, and enforcing State water quality standards acknowledges the use of mixing zones. The EPA is responsible for evaluating and approving States' water quality standards; EPA approved Washington's Standards, which incorporate the allowance for a mixing zone.

Development of the State's Water Quality Standards, Chapter 173-201A WAC, is an on-going process of balancing restrictions and preserving beneficial uses of the State's waters, consistent with direction of the federal Clean Water Act. This permit, which includes authorization of a mixing zone, conforms to the State's Water Quality Standards and agency policy for implementing that regulation.

### **Schedule of Compliance**

The Columbia Riverkeeper and the Nez Perce Tribe both protested the reissuance of the proposed permit is premature before the necessary studies are completed and compliance with the water quality standards is verified. However, the Council has determined that reissuing the permit with the schedule of compliance is more regulatorily appropriate than requiring the studies through an administrative order. Such an order would essentially be in the form of a permit, but the permit issuance process allows for greater public participation. For example, the fact sheet associated with this proposed permit contains much more background information and data than an administrative order normally allows.

The schedule of compliance contained in Special Condition S11 is intended to allow the Permittee an opportunity to gather data to demonstrate whether the discharge is compliance with the water quality standards. The schedule of compliance is an established regulatory tool provided for in federal and state regulations. As the fact sheet stated, the schedule of compliance contained in this permit is *not a punitive measure*.

The Council feels that the 5-year schedule of compliance contained in the proposed permit is warranted, given the comprehensive and thorough analysis that will be required to verify compliance with the State's surface water quality standards and ground water quality standards. The amount of time required to plan and conduct the outfall evaluation, effluent mixing study, WET Testing, and ground water monitoring will take most of the permit cycle. Furthermore, the first three tasks must be done in the specified order. Costs must be budgeted, consultants contracted, quality assurance plans developed and approved, and the field work done. After these studies are completed at the end of the permit cycle, the Council will definitively know whether the Permittee's discharges are in compliance with the applicable water quality standards.

## **Bioaccumulative Effects and Environmental Fate of Pollutants**

Concerns about bioaccumulative effects and environmental fate of pollutants is perhaps the most difficult of the commentors' issues to address, primarily because the science is still evolving and the regulations have not been revised to effectively address the problem. Both commentors refer to the fact that Native Americans heavily rely on salmon and other aquatic food species for sustenance. Most bioaccumulative toxins aggregate in organs of fish not usually eaten, such as the liver, rather than muscle tissue, but mercury is an exception.

WET Testing addresses the short-term aggregate effects of discharges, but the four-day period associated with the chronic toxicity test is too short an observation period to address the commentors' concerns.

The environmental fate of chemical is difficult to generalize. Environmental fate is pollutant-specific. Pollutants may degrade or break down in sunlight, become entrained in sediments, or volatilize.

There is a structural problem with using the NPDES permitting process to address bioaccumulative effects of pollutants because permits address specific pollutants in a local area, but an organism's ailment may be due to factors beyond the Permittee's control. At this time, the best tool available to determine bioaccumulative effects and environmental fate of pollutants is the total maximum daily load (TMDL) process.

At this time, the human health criteria are established at a protective concentration assuming a 70-year exposure to each of the regulated chemical pollutants, but little research has been done on the aggregate impacts of the numerous substances present in our streams. Recent news reports have questioned the adequacy of the existing standards to address such issues as the Native Americans' tendency to eat more fish than the average American, but EPA has not done the research and revised the recommended standards. Until such time as EPA recommends specific revisions of the water quality standards to account for bioaccumulative effects and the environmental fate of pollutants, the Council is required to use the existing standards and regulations to issue NPDES Permits. Using any other standards, without a proper scientific and policy basis, would be considered arbitrary and capricious.

## Comments Received from the Department of Ecology—Richland Office

### Fact Sheet:

1. Summary page, 3<sup>rd</sup> bullet – modify to include assess pollutants in the discharge for compliance with the applicable surface and ground water quality standards.
2. Summary page, 4<sup>th</sup> bullet – re-characterize both chronic and acute toxicities utilizing WET testing.
3. Page 4, 3<sup>rd</sup> paragraph – define acronym EFSEC
4. Page 7, 1<sup>st</sup> paragraph, 3<sup>rd</sup> sentence – and there is no discharge of storm water to surface waters, thus according to the storm water industrial permit fact sheet, this facility does not require an Industrial Stormwater Permit. However, as discharge is sent to ground, this effluent must meet Groundwater quality standards according to WAC-173-200. Should this discharge not meet Ground water quality standards, treatment will be required prior to discharge. And delete final sentence in that paragraph.
5. Page 15, 2<sup>nd</sup> paragraph – To ensure that only cooling tower wastewater does not contain detectable amounts of priority pollutants, is there a sampling location that measures just this component of outfall 001 rather than all of outfall 001?
6. Page 21, 2<sup>nd</sup> paragraph, 3<sup>rd</sup> sentence – “it is doubtful the Permittee’s discharge exceeds water quality criteria”.
7. Page 21, 5<sup>th</sup> paragraph is incomplete sentence.
8. Page 24, 2<sup>nd</sup> paragraph under “Ground Water Quality Limitations”, 1<sup>st</sup> sentence – Add “Stormwater and Outfalls 002 and 003....”
9. Page 24, 4<sup>th</sup> paragraph under “Ground Water Quality Limitations”, 1<sup>st</sup> sentence – Add “from stormwater and Outfalls 002 and 003....”
10. Page 25, 1<sup>st</sup> paragraph, 1<sup>st</sup> sentence – Add “from stormwater and Outfalls 002 and 003....”
11. Page 28, Change Heading from “Best Management Practices (Spill) Plan” to “Best Management Practices (Spill and Operations and Management) Plans”.
12. Page 28 - Include an O&M generic paragraph or add sentences to 6<sup>th</sup> paragraph.

13. Page 28, 6<sup>th</sup> paragraph - Add a final sentence stating that "Best Management Practices for Spill and O&M concerns should be reviewed at least annually. Upon review of the Plans, a letter should be sent to Ecology stating that either the existing plans and procedures are consistent with current operations or that upgrades have been made to the Plans."
14. Page 30 – Add any relevant storm water references from above.

**Response:** It is past the regulatory deadline to modify the fact sheet; however, the Council acknowledges Ecology's comments.

### Permit

1. Page 6/33, Summary of Permit Report Submittals – Move Ground water sampling the 3<sup>rd</sup> year, add the final report to be completed the 4<sup>th</sup> year and pending the findings, have an Engineering Facilities Report required the 5<sup>th</sup> year with the Permit Application should treatment of the Groundwater streams (stormwater, outfalls 002 and 003) be required.
2. Page 11/33, Under Outfall 002 - Add the stormwater component to the description.
3. Page 16/33, Under S4, A – Add a sentence requiring the Permittee to review O&M plans/procedures and to send a letter to Ecology upon review of the Plans, "stating that either the existing plans and procedures are consistent with current operations or that upgrades have been made to the Plans.
4. Page 18/33, Under S7 - Add a sentence requiring the Permittee to review Spill plans/procedures and to send a letter to Ecology upon review of the Plans, "stating that either the existing plans and procedures are consistent with current operations or that upgrades have been made to the Plans.
5. Page 26/33, S11, B#4 – Change Groundwater monitoring/reporting schedule to 3<sup>rd</sup> year sample, 4<sup>th</sup> year final report, and 5<sup>th</sup> year Engineering Facilities Report to treat groundwater if needed.

**Response to Comments 1 and 5:** The Council feels the schedule in the proposed permit is reasonable. The proposed permit language will not be modified.

**Response to Comment 2:** The Council feels the permit language is sufficient, as written, because 1) stormwater does not comprise a significant component of the discharge to Outfalls 002 and 003, except during rare intense storm events, and 2) the required ground water quality study will capture *all* discharges to ground water. The proposed permit language will not be modified.

**Response to Comments 3 and 4:** The Council feels the submittals requirements in the proposed permit are reasonable. The proposed permit language will not be modified.